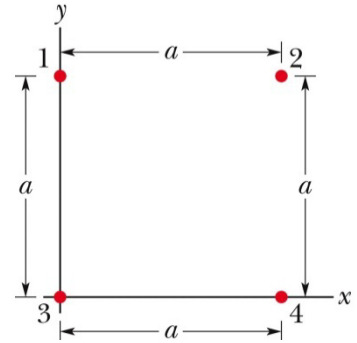
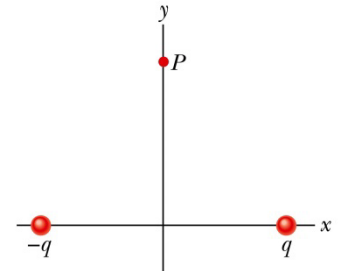


Ch. 18 Worksheet

1. Four particles are placed at the corners of a square with sides of length $a = 5.0$ cm, as shown in the figure. If $q_1 = 100 \times 10^{-9}$ C, $q_2 = -100 \times 10^{-9}$ C, $q_3 = 200 \times 10^{-9}$ C, and $q_4 = -200 \times 10^{-9}$ C, what are the x and y components of the net electrostatic force on particle 3.



2. The figure shows two charged particles on an x-axis: $-q = -3.20 \times 10^{-19}$ C at $x = -3.00$ m and $q = +3.20 \times 10^{-19}$ C at $x = +3.00$ m.
- What is the magnitude of the net electric field at point P located at $y = +4.00$ m due to the two charges?
 - If a charge of -1.60×10^{-19} C is placed at point, what is the force on this charge due to the other two charges?



3. The magnitude of the electrostatic force between two identical ions that are separated by a distance of 5.0×10^{-10} m is 3.7×10^{-9} N.
- What is the charge of each ion?
 - How many electrons are “missing” from each ion? (*Hint*: Charge is quantized)